

ABSTRACT OF THE DISCLOSURE

An ultrasonic transmitter generates a reference signal based on a clock signal of a specific frequency and a control signal made up of binary values 0 and 1 for controlling how the level (High or Low) of a carrier drive signal should change, and generates an analog signal constituting the carrier drive signal by pulse-duration-modulating the reference signal. Produced from the carrier drive signal, a driving pulse signal is shaped into a curved waveform having a gradually rising leading edge and a gradually falling trailing edge as the amplitude of the carrier drive signal is gradually increased and decreased based on the control signal.